DOCUMENT RESUME

ED 296 512 EC 210 280

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TITLE Increasing Response Accuracy in Moderately Retarded Adolescents through the Use of Time Delay.
PUB DATE Oct 87
NOTE 12p.; Paper presented at the Annual Meeting of the American Evaluation Association (Boston, MA, October 15-17, 1987).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Classroom Techniques; Cognitive Processes; *Instructional Effectiveness; Intervention; Junior High Schools; *Moderate Mental Retardation; Outcomes of Treatment; Performance; Prompting; *Reaction Time; Special Education; *Student Improvement; *Student Reaction; Teaching Methods; *Time Factors (Learning)
IDENTIFIERS *Time Lag

ABSTRACT

This study attempted to evaluate the efficacy of time delay in increasing the academic response accuracy of moderately retarded adolescents. The time delay technique provided a means by which "cognitive organizers" could be taught to the students to mediate their behavior and improve academic performance. A modified multiple baseline alternating treatments design was used with junior high subjects in four special education classrooms, with each classroom having between 12 and 15 students. During the experimental phase of verbal prompt and time delay, the daily percentage of accurate oral student responses increased significantly over the baseline phase. Removing the verbal prompt and simply delaying student responses did not adversely affect accuracy. The study concluded that time delay can be a viable means of increasing response accuracy in moderately mentally retarded adolescents. The verbal prompt was needed only as a means of establishing stimulus control for the time delay technique. (JDD)

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ED296512

INCREASING RESPONSE ACCURACY IN MODERATELY RETARDED ADOLESCENTS THROUGH THE USE OF TIME DELAY

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BACKGROUND AND INTRODUCTION

Since the initial attempts at intervening with handicapped individuals (Itard, 1932; Seguin, 1866), a prime objective among educators has been to increase accuracy of performance in special students. Several professionals have concentrated their efforts upon the development of methods, materials, and curricula which would enhance the individual performance of exceptional persons (Kokasha, 1968; Kolestoe and Frey, 1965; Noar, 1974). This emphasis has continued to the present time (Mithaug, Martin and Agan, 1987; Wehman, Kregel and Barcus, 1985; Williams, 1986). The current study attempts to evaluate the efficacy of time delay to increase academic response accuracy in moderately retarded adolescents. Research has indicated that time delay is a viable technique for fostering skill generalization in handicapped persons (Fowler and Baer, 1981; Swartz and Hawskins, 1970; Halle, Marshall and Spadin, 1979). However, the effectiveness of time delay in improving response accuracy has, as yet, not been determinined

Significance for the Study

Traditionally most instructional methods for the moderately mentally retarded have emphasized immediate reinforcement for desired responses or instruction based upon an individual's specific level of development. The former has often resulted in the development of splinter skills while the later has resulted in the aquisition of age

inappropriate behaviors. The modified time delay technique (Stokes and Baer, 1977) employed in this study provides a means by which "cognitive organizers" can be taught to the mentally retarded as means by which they can mediate their behavior and improve academic performance. This study can provide the practitioner with data which validates the viability of time delay as an instructional tool.

Justification for the Study

Time delay as an intervention technique has traditionally been a research topic related to skill generalization in handicapped persons. The skills under examination in such cases have been present in the subject's behavior repertoire. The current study examines the effect of time delay on skill acquisition rather than on generalization of previously acquired skills.

Statement of Problem

The problem in this study was to determine the efficiency of time delay as a means of facilitating oral, academic, response accuracy in moderately retarded adolescents.

Research Questions

As a means of structuring this investigation, answers to the three following questions were sought:

1. What is the combined effect of verbal prompts and time delay in increasing the oral, academic, response accuracy of moderately mentally retarded adolescents?

2. What is the effect of time delay alone in increasing the oral, academic, response accuracy of moderately mentally retarded adolescents?
3. Will the behavior of interest be maintained over time under the time delay contingency alone?

Selection of Population and Sample Description

The subjects in this study consisted of four groups of moderately mentally retarded adolescents in three rural southern school districts. Each group was made up of the students in a single junior high school level special education classroom. The classrooms ranged in size from 12 to 15 students. The subjects ranged in I.Q. from 42 to 53.

Research Design

The research design employed in this study is a modified multiple baseline alternating treatments design (Kazdin and Geesey, 1977). This specific design involves the comparison of baseline (pre-intervention data) performance of a group with that groups performance of the same skill following th initiation of experimental contingencies. The experimental contingencies are initiated at different points in time. In addition, in this design different contingencies are systematically alternated to determine their specific impact on group performance. While this design is primarily applicable to single subject research studies, it is also appropriate for use with groups of individuals (Burrish, Sanders and Wolf, 1969; Herman and Tramontana, 1971; Blackbourn, 1986.

Procedures

During the fall semester, 1986, four junior high classrooms for the moderately mentally retarded were invited to participate in a university sponsored research project. The project was to examine the efficacy of time delay as an academic "cognitive organizer" for handicapped children. Baseline data on student response accuracy was collected through the use of a frequency count technique (Alberto and Troutman, 1986) on each of the four groups. This data was collected during daily oral examinations of the students by the teacher, following social skills instruction.

An experimental contingency was applied to each of the four groups at different times during the project (Group 1 = Day, 6, Group 2 = Day 9, Group 3 = Day 14, Group 4 = Day 16). The experimental contingency consisted of having each teacher provide a prompt to a student who had been recognized to respond, of "Stop, Think" and then delaying the student's response 5 - 15 seconds.

After 5 days under the first condition, a second experimental contingency was applied to each experimental group at different times (Group 1 = Day 11, Group 2 = Day 14, Group 3 = Day 19, Group 4 = Day 21). This condition consisted only of delaying student responses 5 - 15 seconds following the teachers recognizing them to respond. This condition continued until day 30 of the experiment.

Reliability measures were taken every third day and ranged from 88 percent to 100 percent agreement with a mean of 93.6 percent. Interobserver reliability was detrmined by dividing the total of observer agreements by observer agreements and disagreements and

multiplying by 100 (Hall and Van Houten, 1983). In addition to counting the occurence of target behaviors, the observers noted the time at which each response occurred. This was done to increase precision of measurement and to ensure the consistency of interobserver agreements/disagreements.

Results

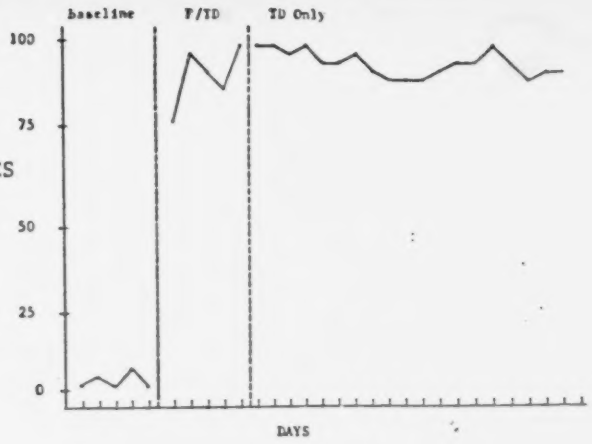
Results of this study are represented graphically in Table I. During baseline phases, the daily percentage of accurate oral student responses to teacher questions ranged from 0 percent to 27 percent across all groups. The mean percentage of accurate student responses during baseline conditions was 8.15 percent.

During the first experimental phase (Verbal Prompt and Time Delay) the daily percentage of accurate oral student responses to teacher questions averaged 91.93 percent. Response accuracy percentages ranged from 79 percent to 100 percent for all groups.

The second experimental contingency of removing the verbal prompt and simply delaying student responses resulted in a mean percentage of accurate student response of 94.29 percent. Under Time Delay. Only contingency, student response accuracy across all groups ranged from 82 to 100 percent.

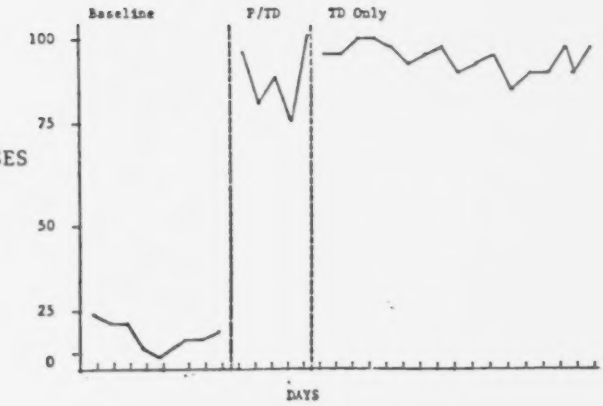
GROUP I

DAILY PERCENTAGE OF ACCURATE ORAL RESPONSES



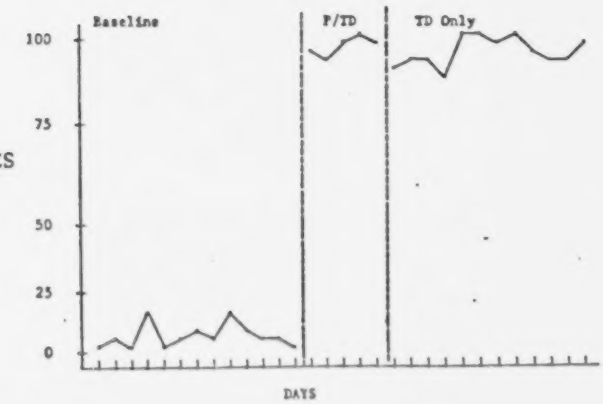
GROUP II

DAILY PERCENTAGE OF ACCURATE ORAL RESPONSES



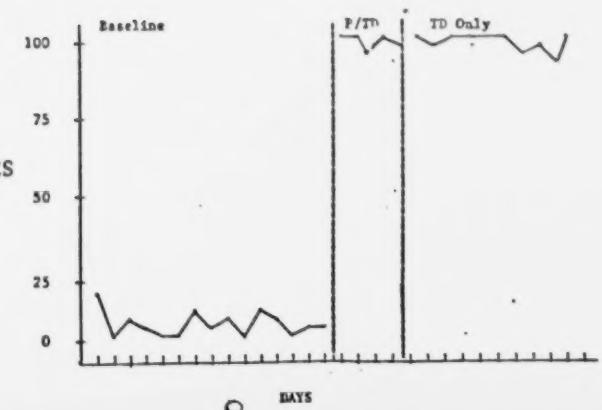
GROUP III

DAILY PERCENTAGE OF ACCURATE ORAL RESPONSES



GROUP IV

DAILY PERCENTAGE OF ACCURATE ORAL RESPONSES



DISCUSSION

The results of this study indicate that time delay can be a viable means of increasing response accuracy in moderately mentally retarded adolescents. In each of the four experimental groups of moderately retarded students the subjects made significant improvement in terms of accuracy of response. While a verbal prompt was initially included as an intervention technique, student performance remained essentially unchanged upon its removal. The prompt was not therefore, a salient element in the occurence of the desired behavior. It was, rather, a means of establishing stimulus control for the time delay technique. While the prompt may be critical in developing a delayed student response, it is not critical in relation to developing greater student response accuracy. In addition, the time delay condition alone was demonstrated to be an effective means of facilitating the maintenance of the target behavior (response accuracy) over time. Each of the groups under the second experimental contingency manifested a persistence of highly accurate oral responses to teacher questions over a relatively extensive period of time.

Student generalization of skills to appropriate situations should always be the ultimate goal of any special education program. However, skill acquisition and proficiency is a necessary prerequisite to generalization training. Time delay, as an instructions technique, can provide the handicapped student with a means of organizing the information available to him and thereby aid in both acquisition and generalization of the skill of interest.

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